

1 to be a business imperative. And some of these  
2 numbers, as you can see up here, are eye openers. A  
3 huge number, one out of five people with disabilities,  
4 and disposable income, and the trillion level.

5 And baby boomers now turning 50 every seven  
6 seconds, and people losing their hearing now at 50.  
7 So these are just purely to say is this going to be  
8 enough to make it a business imperative?

9 We'll find out. I know this panel is about  
10 barriers. But I guess when I think about this I see  
11 it more in terms of opportunities. Although our  
12 question is, you know, how we are going to make it  
13 happen.

14 A lot of people have already talked about  
15 redundancy. And from my perspective redundancy is the  
16 basis of access. And Voice Over IP really offers  
17 that.

18 But can we get there quickly enough? I am  
19 very concerned. You know, they are predicting 50  
20 percent of businesses will be using VoIP by 2006, and  
21 about 40 percent of all U.S. phones by 2009.

22 You know, are we going to get there quickly  
23 enough even though there are a lot of opportunities?  
24 Some of the other opportunities are already happening  
25 now with several hard-of-hearing people using some of

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1 these upstart telephone company services.

2           Getting for 15 dollars a month just about  
3 every bell and whistle that you can possibly think  
4 about. So, the other attraction for some people,  
5 assuming they have access to broadband of course, is  
6 that it can provide them with fairly affordable  
7 services.

8           I thought one of the things to talk about --  
9 the barriers -- would be to also tell you some of the  
10 things that people who are hard-of-hearing need. And,  
11 you know, we have talked a lot about mobile services,  
12 mobile focus, which is really important.

13           But what about using it in your home?  
14 Several other things that need to be connected with  
15 that whole system to make it work, the hardware. And  
16 we are running in with, people who are hard-of-hearing  
17 are running into a lot of problems with that.

18           But anyway, let's look at some of the  
19 features. Some of these are already available. And  
20 the question is we don't want to lose them. And some  
21 of them are more like a wish-list, but we believe  
22 could be possible, because of the opportunities that  
23 Voice Over IP offers.

24           So we are talking basic things like clear,  
25 strong, high quality signal for speech and tele-coil.

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1 It is very important for hard-of-hearing people.

2 Adequate volume control, and this is a lot  
3 of times on the hardware piece of it. Adequate volume  
4 control easily manipulated. Tele-coil compatibility  
5 without interference for people using it with their  
6 cochlear implants and their hearing aids.

7 Simultaneous voice and text display, we have  
8 that now with their preferred relay, which is  
9 captioned. Are we going to be able to keep that? We  
10 don't know.

11 From what I'm hearing, if it's compatible  
12 with a fax we will be able to. But we don't know for  
13 sure. But we do want to keep that capability, because  
14 people hard of hearing can hear some of it.

15 But they want to be able to read at the same  
16 time, particularly older people. Now, I know these  
17 baby-boomers that are coming along. Also being able  
18 to output a jack with sufficient power to use  
19 assistive listening devices, neck loops, and such in  
20 the hardware piece of it.

21 High quality video just around the mouth, 30  
22 frames a second, or faster, you know, just being able  
23 to have a piece of that video that will give you  
24 enough speed that speech reading will be accessible.

25 We have already talked about simultaneous

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1 audio and video a lot. But also the ability to add  
2 text to voice calls. And it would stream in an  
3 incoming call.

4 Let's not forget about incoming calls. We  
5 are on a call, and we think we are doing okay, and all  
6 of a sudden we start to realize this is somebody we  
7 just cannot hear.

8 Can we then immediately bring in text to  
9 that call? That's very important for hard-of-hearing  
10 people. An ability to initiate three-way-calling both  
11 for incoming and outgoing calls, which at the moment  
12 is not something that can happen.

13 That should be. That's on our wish-list.  
14 But I think that could be something that we could hope  
15 for. We have talked a lot about emergency. I don't  
16 need to get into that.

17 The ability to connect and to relay into a  
18 call at any time, a call that is not a relay, but you  
19 want to bring it in to a call when you are suddenly  
20 running into problems.

21 And maybe, in terms of getting less error  
22 when you are looking at speech recognition in the  
23 future, to have less error, to enable hearing callers  
24 to use their own speech recognition on their end.

25 So each have their own speech recognition on

1 either end. So, I'm here talking a little bit more  
2 about existing hardware that's not accessible. Many  
3 people are setting up Voice Over IP.

4 And their preferred way seems to be to do it  
5 with extendible cordless phones. And right now, even  
6 though those phones are regulated, they are not in  
7 many times accessible, because they are starting to  
8 create interference because they have gone digital, if  
9 I put it like that.

10 So we are running into trouble with people  
11 finding that that's the best way to use Voice Over IP.  
12 But they can't because the hardware is not accessible.  
13 So what are we going to do about that?

14 And, you know, we have talked about whether  
15 or not there should be enforcement versus, you know,  
16 dangling a carrot. We already have laws in place.  
17 And one of the big barriers that we're facing right  
18 now is that they are not being strongly enough  
19 enforced.

20 And that is definitely going to impact hard-  
21 of-hearing people's ability to use Voice Over IP. So  
22 we really have to look at that very seriously. And  
23 then I think right now there's the whole uncertainty  
24 of where Voice Over IP actually fits in to the  
25 telecommunications structure.

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1           Is it going to be regulated? You know,  
2   based on history, and this is being said over and over  
3   again, that really is the only way that we do get  
4   access.

5           And even then it is hard to make it happen,  
6   because of the enforcement situation, it's not always  
7   as effective as it should be or it might be. I think  
8   the issue here is that a decision needs to be made  
9   very quickly by the FCC about this, because Voice Over  
10  IP is rolling out extremely quickly, very fast.

11          And we are going to be -- I see us being in  
12  a situation that we've been in before where, you know,  
13  we are playing catch-up all over again because we just  
14  have missed the boat in terms of getting started  
15  quickly enough.

16          And there are leaders here, and companies  
17  that are obviously making efforts to make sure that  
18  they do have access in their systems. But what about  
19  all the other companies out there that are not  
20  represented here today, and are not as focused as  
21  these companies who are here today. Thank you.

22          DR. PEPPER: Thank you Brenda. Our next  
23  speaker is Barry Andrews, who is trained as an  
24  Engineer. And he is President of 8x8. 8x8 is a Voice  
25  Over IP service provider.

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1           And so Barry is going to focus on the  
2 questions from the perspective of somebody who is  
3 actually providing Voice Over IP.

4           MR. ANDREWS: Thank you, I didn't get my  
5 slides in on time, so if anyone would like a copy,  
6 please send me an email or see me after the talk.

7           DR. PEPPER: They also will be posted on our  
8 website with the others.

9           MR. ANDREWS: Okay, great. The continuing  
10 rapid adoption of broadband internet access is one of  
11 the major factors that is driving the growing Voice  
12 Over IP market.

13           Services -- and by that I mean voice, video,  
14 and text -- can be delivered reliably and cost  
15 effectively over IP networks. There are challenges  
16 that are presented by IP-enabled services.

17           Some of these have been discussed already,  
18 and a number will be discussed in the 911 regulatory  
19 panel. Those include usability and accessibility. We  
20 want a service that's easy to use by all.

21           Quality, especially as it relates to video  
22 and the requirements for bandwidth, as well as video  
23 and audio sync. Interoperability, the joke is, you  
24 know, the nice thing about standards is there's so  
25 many to choose from.

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1           But that doesn't help when you're trying to  
2   communicate with other vendors. And public service  
3   and safety, including such things as rural access. In  
4   my very brief talk today I'm going to attempt to do a  
5   demo of one such service called Packet 8 that our  
6   company offers.

7           It's an example today of a voice and video  
8   over IP. And because I'm worried about running out of  
9   time, I'm actually going to state my conclusion right  
10  now.

11           And that is voice, video, and text in a  
12  universal service over IP with global interoperability  
13  presents the opportunity to improve personal  
14  communication for everyone.

15           So, very quickly, Packet 8, a description,  
16  and then the demo. Packet 8 is an end-to-end voice,  
17  and/or video communication service that operates over  
18  the internet.

19           It allows calls to or from any phone in the  
20  world, including traditional telephones. And it uses  
21  regular telephone numbers currently assigned from the  
22  U.S.

23           It enables high quality voice and video  
24  calls dependant on your video bandwidth that you might  
25  have home or your office, or wherever. Subscribers



1 can choose the use of a traditional analog telephone  
2 to connect to the audio adapter, their computer, a  
3 cell phone, or a video phone to place calls.

4 It's extremely simple to install. It  
5 requires only the terminal adapter or video phone.  
6 Basically plug it in and have a dial tone. My two  
7 year old daughter can operate the video phone.

8 For her, you know, making a phone call means  
9 a video call. She's at that age she knows nothing  
10 else other than talking to daddy on the video phone.  
11 Set up is managed and billed via the internet.

12 This is perhaps a subset of the diagram that  
13 Gunnar was showing earlier in the first panel. Our  
14 service is also based on SIP. And I'm happy to say I  
15 have not talked to Gunnar at all.

16 But the set of protocols that we are using  
17 very closely matches what he described as the  
18 preferred setup protocols. Okay, so we will see if  
19 Murphy's law doesn't take effect.

20 So, this is the video phone. I think I have  
21 people here at the FCC that can vouch that, you know,  
22 they did no special configuration of their firewall.  
23 We basically just plugged it in.

24 DR. PEPPER: Can you give him the handheld  
25 mic or -- there we go.

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1           MR. ANDREWS: So I'm calling a San Jose,  
2 California number. And actually I dialed the wrong  
3 number. But this is my daughter Janette at home. I  
4 sweetie, how are you doing.

5           She's my five year old. But the two year  
6 old is hiding somewhere there as well. She can use  
7 the video phone. Okay. Hi girls. I think they sense  
8 someone else is here.

9           Let me try another number. Okay, this one  
10 is different by one digit. Hello Richard. Richard is  
11 actually a former employee of 8x8 when we had our via-  
12 TV line of video phones.

13           And he was instrumental in enabling that  
14 device for text over a POTS video phone. These are  
15 similar type things that we are working on with the  
16 Packet 8 service today.

17           Hi Richard, how's the weather in California?  
18 Okay, so we are somewhat limited by the bandwidth  
19 here, but you can see that it does work today. This  
20 is real, this is something that's offered now.

21           Thank you, Richard, good-bye. Okay, I'm not  
22 sure where we are time-wise. I do have a little bit  
23 of time. And maybe I will just point out that I go  
24 into more detail on some of the usability requirements  
25 in the last two slides.

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1           Of particular interest are things that are  
2 outside of our control as a service provider, are, for  
3 example, the bandwidth. DSL is typically you have a  
4 downstream of 384 Kbs per second or greater.

5           But the upstream is limited to 128. Video  
6 and audio over IP are symmetric in terms of their  
7 bandwidth requirements. The first call I made was  
8 actually to my home.

9           We have cable there. The upstream bandwidth  
10 there is better than DSL, it is 256. And, of course,  
11 the more the better. Gunnar mentioned H.263 is a very  
12 common and very well known video codec.

13           And there's actually a lot of activity  
14 within the ITU on enhanced video codec such as H.264.  
15 All right, I see I'm out of time. There is another  
16 slide here if anyone wants to read more. Thank you  
17 very much.

18           DR. PEPPER: Thank you. Our next speaker is  
19 Claude Stout. Claude has been a frequent participant  
20 here at the FCC in a variety of forms. He's currently  
21 Executive Director of Telecommunications for the deaf,  
22 TDI.

23           TDI is a national non-profit advocacy  
24 organization that promotes equal access to  
25 telecommunications and media for deaf people in the

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1 United States, as well as people hard-of-hearing and  
2 deaf/blind.

3 Prior to TDI, Mr. Stout was the Assistant  
4 Director of Community Affairs with North Carolina  
5 Division of Services for the deaf and hard-of-hearing.  
6 Claude, I am very pleased to see you again. And we  
7 are looking forward to your presentation.

8 MR. STOUT: Thank you. It is good to see  
9 everyone here today. Brenda talked from the  
10 perspective of hard-of-hearing people in America. I  
11 am going to speak from the perspective of deaf, late-  
12 deafened, and deaf/blind Americans.

13 We in America who are late-deaf, and deaf,  
14 and deaf/blind get more encouraged by the advent of  
15 VoIP and the internet capable services throughout  
16 America.

17 And we are already enjoying some services in  
18 that arena. For example, right now we are enjoying  
19 internet relay services. I have to tell you we don't  
20 have to bother with our TTYs.

21 We just have our computer on our desk. We  
22 can put aside that TTY and just move forward using our  
23 computer. And it's just in a window on our computer.  
24 And we can move to relay service, video relay service,  
25 or a Microsoft Word document and transition between

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1 those applications very seamlessly.

2 The other thing we enjoy using is the new  
3 video relay services that have been in existence for a  
4 short time now. And they are amazing for the  
5 community.

6 And I have to let you know that VRS is not  
7 an add-on service. It's not an added value service  
8 for us. It's really not. It is approaching  
9 functional equivalency for us more than any other  
10 service.

11 VRS allows me to use my native language to  
12 communicate with an interpreter through my computer  
13 and a webcam, and then communicate to a hearing person  
14 on the other end of the call.

15 And it goes quickly. The hearing person is  
16 going to be much more eager to receive phone calls for  
17 me because there's not delay that's experienced  
18 through a traditional relay call in the turn taking  
19 that's necessary there.

20 And as we experience these IP services,  
21 these basic services, we are now seeing that we are  
22 leaving the traditional services behind, that we are  
23 now ready to dive into the multimedia and to, you  
24 know, distance ourselves from using those traditional  
25 devices and services, and be able to use, you know,

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1 the other multimedia services that are out there, like  
2 have been presented this morning.

3 There's a multimedia approach that can be  
4 used for audio text. Voice and video all integrated  
5 into one product that is very exciting for us. Please  
6 know that deaf people have been involved with advocacy  
7 for many years.

8 Some of us for 30 years. Some of us who  
9 have lived a long time have been in it for 40 or 50  
10 years, you know. And we feel we have seen such great  
11 changes in access, and that more access will be  
12 granted as regulations and those things are developed  
13 that will help move the technology forward.

14 A lot of this effort has been by volunteers  
15 or by companies just out of the goodness of their  
16 hearts developing these products. And we encourage  
17 that voluntary participation from companies throughout  
18 the United States that have done that.

19 But in order to get more services for us to  
20 be able to see cost reductions and to be able to have,  
21 you know, more convenience and enjoy better customer  
22 care, we want to see a more diversity of services out  
23 there, more things developed in the IP arena for  
24 people with disabilities.

25 Broadband is now spreading across America.

1 But we need to have research and rules created that  
2 allow us to enjoy the most of broadband. Right now,  
3 as we have talked about with video services, sometimes  
4 we experience reduced frame rates that impede the  
5 quality.

6           Maybe in a workplace we can't make a call  
7 because of a firewall that's set up that doesn't allow  
8 a video call to be made. We need, you know, work-  
9 arounds to be set up that still maintain the security  
10 of the system for companies.

11           Many of us use computers in libraries and  
12 schools. And many of us in our community are poor and  
13 don't have computers at home. And we depend on  
14 support from universal services funds that allow us to  
15 have access to the technology that we do need.

16           Many of us, you know, have phone lines that  
17 cost a certain amount of money. We need to have a fee  
18 structure set up that will no longer rely on just the  
19 phone service fees only, but will allow IP fee  
20 structures to be incorporated there.

21           We are also looking at, you know, different  
22 economic situations, and educational situations,  
23 people that are very good in English, or other folks  
24 that because English is their second language they are  
25 not as strong in that language.

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1           Other people who are underemployed because  
2   of their disability that don't have the money or the  
3   funds to be able to access the technology that gives  
4   them full access.

5           There's lots of areas where there seems to  
6   be a focus on the high-need areas. But there's also  
7   people that may seem to have a low need that still  
8   need access to this technology.

9           This IP technology, you know, shouldn't push  
10   us into another valley. But it should, as products  
11   are developed, and services are developed, it should  
12   lead us along with the rest of society in being able  
13   to take advantage of these products and services that  
14   are developed.

15           Technology means freedom for us. It  
16   enlarges and expands the playing field for us in  
17   employment, in education, in community, and other  
18   arenas in our lives.

19           I'd like to emphasize to the IP developers  
20   out there, the companies and the developers, that when  
21   you design and develop products and services please  
22   consider our needs, not just develop a great product  
23   and then say, oh, I forgot to meet the deaf and hard-  
24   of-hearing needs

25           And now what are we going to do with this?



1 We are going to have to reverse engineer or do an ad-  
2 on or something. If you think of our needs first,  
3 don't assume those needs, ask us.

4 Definitely ask our needs. Ask people. Go  
5 out in the communities, ask people throughout the  
6 nation what their needs are and build them in from the  
7 ground level.

8 We applaud Gunnar and others like him who  
9 have, you know, encouraged the production of  
10 multimedia, audio, text, and video services all  
11 combined into one product so that we can have our  
12 everyday needs taken care of.

13 There's a variety of degrees of hearing loss  
14 out there. There's a variety of degrees of vision  
15 loss out there. And all of those needs need to be  
16 considered. Thank you very much.

17 DR. PEPPER: Thank you, Claude. Our next  
18 speaker is Jim Tobias. Jim is President of Inclusive  
19 Technologies, and is working with the field of  
20 technology and disabilities for about 25 years.

21 He currently is providing consulting  
22 services and telecommunications and disability, aging,  
23 and education. He was a member of the Access Board's  
24 Telecommunication Accessibility Advisory Committee  
25 responsible for drafting section 225 regulations.

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1           And he's also an Alum of the FCC's first  
2   consumer disabilities technical advisory committee.  
3   So thank you very much Jim.

4           MR. TOBIAS: Thanks. I want to talk today  
5   about what I consider to be the worst functional  
6   limitation that could be imposed by the migration to  
7   Voice Over IP or IP-enabled services.

8           And that is in an information age not  
9   knowing is the worst disability, the worst functional  
10   limitation that a person can have. When we are  
11   offered a range of products that allow us to perform  
12   almost infinite combinations of services -- we've  
13   heard about voice and text, and video, and automatic  
14   translation -- we have to remember that a product with  
15   infinite functionality, has an infinitely long  
16   configuration system, with an infinite number of  
17   wizard screens that take an infinite amount of time to  
18   figure out which check box and which radio button do I  
19   implement here.

20           And this is not just a theoretical barrier.  
21   This is an actual barrier. If you look at the way to  
22   implement TTY compatibility on today's generation of  
23   cell phones, you find that it's rather deep in the  
24   menu.

25           How are consumers expected to find that

1 information? How deep down do they have to dive into  
2 the manual of an accessible mainstream product to find  
3 the feature that they need to turn on or turn off in  
4 order to make it work the way they need to?

5           So this profound lack of information appears  
6 as a barrier to individuals with disabilities. And we  
7 see this in the outcomes. And to answer Dane's  
8 question, which wasn't asked of this panel, but I will  
9 answer it anyway, what is the approach that the  
10 Commission by profitably take to address  
11 accessibility?

12           I would say an outcomes oriented approach,  
13 not an approach that says here are the regulations,  
14 and here is the lack of complaints, which indicates  
15 that there must be the right amount of compliance.

16           But what percentage of people with  
17 disabilities can access what reasonable market basket  
18 of services in the world of telecommunications given  
19 the combination of mainstream technologies and  
20 assistive technologies?

21           Are we actually showing an improvement in  
22 people's live and abilities to communicate in this  
23 information age? So if people don't know about the  
24 services and features and products that are  
25 accessible, it's just as if they were never made

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1 available at all.

2           If we let ourselves live at the abstract  
3 level of oh yeah, it's in there somewhere, we haven't  
4 really performed the public service that I think we  
5 want to perform.

6           It would be great if the only people who  
7 lacked information were the consumers. But in point  
8 of fact, those of us who have worked with industry  
9 over the years recognize that industry has its own,  
10 you know, I don't know what I don't know to channel  
11 the Secretary of Defense.

12           By the way, he's still Secretary of Defense.  
13 I haven't checked the news this morning. But industry  
14 very often doesn't know what it doesn't know about  
15 accessibility.

16           And they recognize that, and they are  
17 willing to learn. But, again, those of us who have  
18 worked with industry over the years, find the irony  
19 that just when we've managed to train up the right  
20 staffer, in the right job, in the right company,  
21 there's some turn, there's some re-engineering, a re-  
22 org.

23           Or that person retires or finds, imagine it,  
24 a better job than working on accessibility within that  
25 company. And so we begin the process all over again.

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1 So there is an organizational ignorance, or a lack of  
2 organizational memory in large mainstream companies  
3 that occurs.

4 And we see it going on now with, you know,  
5 large scale retirements. We have lost many of our  
6 accessibility champions and technology experts within  
7 mainstream companies.

8 So that's an issue that we have to resolve  
9 somehow, not by locking people into their jobs, but  
10 figuring out some way to make sure that information  
11 reaches the right people in industry at the right  
12 moment.

13 Policy makers also have their own areas of  
14 ignorance. And I will leave that sentence without any  
15 implications. And again, to focus on outcomes, for a  
16 political environment that focuses so much on market  
17 realities, this is an area where I think it is highly  
18 justified.

19 But it's an area where ignorance is endemic.  
20 What do we know about TTY users as a market? What do  
21 we know about relay users as a market? What do we  
22 know about screen-reader users as a market?

23 Both the current users and the potential  
24 users, we hardly know anything about them. We wind up  
25 using anecdotal experience, oh so and so now has a

1 Blackberry, and they're not using their TTY anymore.

2 I guarantee that that's true. What  
3 percentage of the adoption curve, if you think of the  
4 innovators and early adopters, what percentage have  
5 already moved and migrated away from some of the  
6 legacy equipment and into two-way text, and text over  
7 IP, and what have you?

8 And what percentage have been left behind,  
9 and maybe left behind if we don't take some concerted  
10 social policy action? It's almost enough to get you  
11 to believe in the existence of a digital divide, if we  
12 didn't know better.

13 I'd like to sort of end this dreary  
14 exposition with a little bit of hope. We do see  
15 companies that are actively reaching out to understand  
16 what consumers' needs are, and to get beyond just the  
17 anecdote level, or the assumption level, actually  
18 doing primary market research on customers with  
19 disabilities, fantastic stuff.

20 We find advocacy organizations doing the  
21 same kind of work, asking their members what you use,  
22 why did you change what you used to us? And as a  
23 final point, I want to emphasize the initiative taken  
24 on by the Alliance for Telecom Industry Solutions,  
25 which is an industry body that coordinates information

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1 for the sake of manufacturers and telecom carriers,  
2 etcetera.

3 It is now moving towards the establishment  
4 of a telecom accessibility council based on its  
5 experience with stake holders from the disability  
6 communities, researchers, policy makers, and people in  
7 industry.

8 This is a new initiative. And we have  
9 already talked to most of the industry stake holders  
10 in the room. If you'd like to follow up on it, get  
11 information, you can find information about it on the  
12 website that we distributed about, or at [atis.org](http://atis.org).  
13 Thank you.

14 DR. PEPPER: Thank you very much. Thanks  
15 Jim. Our final speaker on the panel before we open it  
16 up is Nate Wilcox. Nate is the Systems Administrative  
17 for the Vermont Enhanced 911 Program.

18 The program oversees a multiple public  
19 safety answering point, PSAP, system. And it was  
20 recently used as a benchmark system for the report  
21 card to the nation on 911 that was presented to  
22 congress a couple of years ago.

23 Nate is the Chair of the Voice Over IP  
24 Packet Technical Committee of NENA, which is the  
25 National Emergency Number Association. And he is

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1 recognized as an industry leader for Voice Over IP  
2 technical advancements within the 911 community.

3 And I have met Nate at multiple Voice Over  
4 IP meetings. And I know that he has been working, and  
5 his group has been working, very, very hard. And I'm  
6 glad Nate that you are here as a 911 person, because  
7 you have already hear multiple people talk about the  
8 importance of E911, 911, not just in and of itself,  
9 but particularly for people with disabilities. So,  
10 Nate?

11 MR. WILCOX: Thank you Bob. And I am  
12 absolutely glad to be here. I was not able to make  
13 the E911 summit we had last time here at the FCC. My  
14 boss was here, Evelyn Bailey.

15 And she generally talks within that arena.  
16 However, I am here to talk about good things within  
17 911. I have good news. Because all I have heard so  
18 far this morning really is that there's a true  
19 barrier, right, to 911, and in particular for the  
20 disabled community.

21 So I have good news. I am here to talk on  
22 behalf of the small and overworked group of dedicated  
23 911 individuals within the 911 community that are  
24 working to enable IP connectivity within the 911 PSAP  
25 nationwide.

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1           Not only nationwide, but on a global effort.  
2   And we are finally seeing the light of day from those  
3   efforts that we have been undertaking for about three  
4   years now, because of the adoption of consumer VoIP  
5   services and the recognition now.

6           That's not to say that we're not still in  
7   the requirements of analysis stage. So clearly what's  
8   brought out from you folks will be brought back into  
9   the design of the new 911, the future 911, which will  
10   be wholly VoIP enabled, is the thought process.

11           So what needs to happen -- it's a paradigm  
12   shift -- we have to think differently within 911. And  
13   along those lines, I'm going to talk about challenges  
14   that we are facing, and some of the solutions that we  
15   envision to those challenges.

16           A lot of those challenges that we're facing  
17   in 911 are challenges that are similar across the  
18   board for 911. They impact everybody, regardless of  
19   who uses the VoIP phone or that mode of connectivity,  
20   it impacts everybody.

21           I'm also going to provide some solutions.  
22   So I was a little confused as to what lies truly  
23   beyond. It seems like 911 always winds up on the  
24   challenges side of it.

25           But really there's some opportunities there

1 as well that we can certainly provide. I will talk  
2 about nomadic user, nomadic VoIP users. I will talk  
3 about TTYs and some of the challenges there.

4 I will talk about the lack of a standardized  
5 approach to IP communication enhancements. And I will  
6 hit on QoS on an end-to-end IP communication system  
7 where 911 is at one end and the consumer VoIP user is  
8 at the other end.

9 And then I will talk a little bit about  
10 what's going on right now within this arena. So  
11 nomadic VoIP users, these are the guys that take the  
12 8x8 telephone adapter to their hotel room, plug it in,  
13 and they get phone service, okay.

14 Within 911 we count on the user without  
15 considering wireless or sedative callers to be  
16 stationary. They are at the end of a pair of wires,  
17 and we always know where they are.

18 And they will always have the same address.  
19 The process for validating that location information  
20 takes about 24 hours with the phone company. So when  
21 I get my new phone service, 24 hours later, my  
22 location information is validated through a process.

23 The problem with VoIP is now I can take my  
24 telephone adapter, plug it into an Ethernet connection  
25 anywhere, and have a location information. But I have

1 to go through the 24 hour period of having that  
2 location information validated, which by the way  
3 hasn't been enabled for Voice Over IP yet.

4 And one of the serious benefits of VoIP is  
5 to be able to take that telephone adapter with me back  
6 and forth to the office, have the same number at the  
7 office as I do at home.

8 So, I'm clearly breaking the 24 hour rule  
9 right away. So what we have to do is we have to  
10 create a paradigm shift for broadband service  
11 providers, those folks that provide the IP services to  
12 be able to validate that location information in  
13 advance before I ever plug in my telephone adapter.

14 That's a paradigm shift that needs to occur  
15 for nomadic VoIP users. TTYs, I think we all are  
16 pretty familiar on some of the negative impacts on  
17 TTYs when you start to use them over Voice Over IP or  
18 IP-enabled circuits.

19 The reality is that the total character  
20 error rate for TTYs could create a situation in which  
21 dropped packets, which is normal within an IP network,  
22 you know, packet loss is normal.

23 IP communications on the whole are designed  
24 to preserve bandwidth. And part of that preservation  
25 is packet loss. So those dropped packets can actually

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1 drop control characters.

2           We all know that. They can actually drop  
3 TTY conversations all together, immediately. It's not  
4 a great situation to be in for the 911 call takers,  
5 certainly not a great situation to be in for the TTY  
6 user who is relying on these communications to  
7 continue.

8           So the paradigm shift for TTYs, we need to  
9 ensure a compressionless as possible compressionless  
10 codec that's used for 911. And I have G.711 up there  
11 as an example.

12           It seems to work well for TTYs. There are  
13 others out there as well. We need to promote  
14 technologies that improve through-put, and use of  
15 alternate communication methods as well to provide  
16 TTYs.

17           I'm talking about SMS, two-way paging, real-  
18 time text messaging, those types of communications.  
19 So that's a shift that needs to occur within that  
20 arena.

21           The lack of a standardized approach, I  
22 recognize the fact that instant messaging, chat  
23 sessions, and other modes of communication are  
24 catching on more and more within the disabled  
25 community.

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1           And clearly the need has to be that that  
2   should be supported at the PSAP site, at the Public  
3   Safety Answering Point. It is unofficially supported  
4   now.

5           If you walk into a PSAP, nine times out of  
6   ten, a lot of those call takers are already using  
7   chats and instant messaging for their coworkers and  
8   family.

9           So, unofficially, it is supported.  
10   Officially it needs to be adopted, right? Full  
11   streaming video isn't supported, and simply because IP  
12   connectivity within PSAP is not inherent.

13          So we need to create a platform that calls  
14   for a standardized approach to all these technologies.  
15   And we need to migrate this capability not only to the  
16   911 PSAP, but beyond to the emergency responders as  
17   well, so they can participate in any of this  
18   information that's coming into the PSAP environment.

19          Quality of service, I'm not going to go over  
20   that too much. Clearly background noises and other  
21   elements associated with Voice Over IP can create  
22   problems for 911 calls.

23          So, in that regard, the paradigm shift is to  
24   provide and support better technologies to support  
25   that. So what's being done? And I've got maybe ten

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1 seconds left here.

2           The National Emergency Number Association  
3 has been working, as I mentioned, through both the  
4 technical and operation side of the house these  
5 issues.

6           We have several folks involved within the  
7 process, including folks from within the ITF and other  
8 organizations similar to that. Our plan is to gain  
9 ANSI accreditation for the standards that come out of  
10 that effort.

11           And, like I said, we are at the requirements  
12 analysis phase. So there is plenty of opportunity for  
13 more input there. We are looking at an immediate  
14 solution for Voice Over IP which will not provide  
15 nomadic or mobile support to be available this month.

16           In fact, the standard is written. An  
17 analogous solution for current 911 processes,  
18 including the ability to locate nomadic callers will  
19 be done by the end of they year.

20           But the real cool product, which will bring  
21 IP into the PSAP, which is the native end-to-end VoIP  
22 with ongoing support for communications at all levels  
23 will begin later this year to be completed, we hope,  
24 by mid year, next year. Thanks.

25           DR. PEPPER: Thank you Nate. That actually